

SUPPLY OF WATER FOR WEST POINT.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A REPORT OF COL. A. L. MILLS IN RELATION TO THE ACQUISITION OF WATER RIGHTS FOR A SUPPLY OF WATER FOR WEST POINT.

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JANUARY 6, 1902.—Referred to the Committee on Military Affairs and ordered to be printed.

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WAR DEPARTMENT,  
*Washington, December 31, 1901.*

SIR: I have the honor to transmit herewith, for the consideration of the Committee on Military Affairs, a communication addressed to Col. A. L. Mills, Superintendent of the United States Military Academy at West Point, under date of October 4 last, by Mr. Caleb Huse, embodying a proposition on behalf of the Citizens' Water Works Company, of Highland Falls, N. Y., to sell to the United States Government certain water rights for the purpose of providing an increased water supply for West Point. Accompanying the same is a report upon the subject by Colonel Mills, with an accompanying map showing the sources of the water supply for the post at West Point, N. Y.

From the said report it will be seen that the present water supply of West Point is greatly inadequate to the needs of that post, and that the question of increasing the supply has received consideration. The current estimates of appropriations for the Military Academy included an item of \$88,442 for the purchase of Long Pond, with its watershed, and the establishment of an engine at the pond to pump water, when needed, into the existing pipe lines leading from Round Pond to the post, which item was included in the estimates forwarded to the Secretary of the Treasury October 15 last by the Secretary of War, for transmission to Congress.

As will be observed by an indorsement of Colonel Mills on the above-mentioned proposition of the Citizens' Water Works Company of

Highland Falls, he recommends an appropriation of \$100,000, or so much thereof as may be necessary to secure the needed additional water supply, the different projects for that purpose to be considered by a board of officers with the view of determining which one of them would be most advantageous to the Government.

From the papers herewith transmitted, it is apparent that an increased water supply for West Point is an imperative necessity, and, realizing the importance of the matter, it is thus submitted to Congress, urgently recommending that an appropriation be made of \$100,000, or so much thereof as may be necessary, to secure the additional water supply required for that post.

Very respectfully,

ELIHU ROOT,  
*Secretary of War.*

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

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HIGHLAND FALLS, N. Y., *October 4, 1901.*

SIR: Referring to my recent conversations with you on the subject of an increased water supply for West Point, I beg now to make, on behalf of the Citizens Water Works Company, the following specific proposition, viz: To sell to the United States Government the watershed of Buttermilk Falls Brook and Cascade Brook above the Government reservation, together with the right to divert the water thereof through pipes for the use of West Point, for the sum of \$100,000. The diagram herewith submitted shows approximately the location and area of the land proposed to be conveyed.

It has for some time been recognized by the West Point authorities that a material addition to the existing water supply must presently be made to meet the steadily increasing demand, and I understand it to be your opinion that such addition is now immediately necessary. The only considerable sources of water supply near West Point are four in number, viz: (1) Round Pond, (2) Cascade Brook, (3) Long Pond, and (4) Buttermilk Falls Brook. Round Pond is already owned by the United States Government, and has proved both inadequate and unsatisfactory. Cascade Brook has been used by the Government for some time past, and for the past year has been almost the sole supply of water from which the new Lusk Reservoir could be filled. This brook is, however, tributary to the Buttermilk Falls Brook, and neither its upper watershed nor the right to divert its water is owned by the Government.

Until recently it has been assumed that Long Pond was the only source remaining available to the Government, for the reason that Buttermilk Falls Brook was wholly controlled by the Citizens' Water Works Company supplying the town of Highland Falls and vicinity. The water company has, however, lately made arrangements for acquiring additional sources of supply to the south of Highland Falls, and constructing a storage reservoir toward the lower end of Buttermilk Falls Brook, whereby the town can be supplied without drawing upon the flow of the upper brook. It thus becomes possible for the company to offer to the Government the entire supply of Buttermilk Falls Brook above the West Point Reservation.

It will, I think, clearly appear that the supply thus offered is by far the most satisfactory that can be obtained.

1. The supply is ample for present and future needs. The flow of the stream is of very large volume during the greater part of the year, and is not wholly interrupted even in the dry season. The watershed is much larger than that of any other stream or pond in the vicinity.

2. The purity of the supply is exceptionably well secured. The stream takes its rise in Mountain Lake (formerly known as Bog Meadon Pond), which has an area of about 60 acres, and lies at an altitude of 1,100 feet on top of the mountain surrounded by unbroken forests. The entire watershed is so irregular and rocky that only a small portion of it could ever be cultivated. It is traversed by few roads and contains no factories or other sources of pollution. Through a large part of its fall the brook dashes over granite rocks by a series of cascades, thus insuring a thorough areating of the water.

3. The proposal hereby made contemplates a sale to the Government of about 700 acres of land, which includes the bed and watershed of Mountain Lake, the upper watershed of Cascade Brook, and the land on either side of Buttermilk Falls Brook from its source in Mountain Lake to the Government reservation. As appears from the diagram herewith, the above parcels of land form, with the land already owned by the Government, a continuous tract entirely inclosing not only Mountain Lake but the entire course of both Buttermilk Falls and Cascade Brooks down to the point of delivery. The supply therefore can be permanently guarded from all forms of contamination.

4. The conformation of the land along the brook which is proposed to be sold to the Government is admirably suited for the construction, at small expense, of a series of storage reservoirs. By this means an indefinitely large supply of water could be accumulated. These reservoirs could at any time be easily flushed and cleaned, and refilled within a comparatively short time.

5. The fall from Mountain Lake to the point where the brook crosses the Government reservation is upward of 500 feet, and the latter point is in turn considerably higher than the Lusk Reservoir. The whole supply can thus be distributed by gravity alone.

6. The price named is an extremely moderate one, in view of the exceptional excellence of the supply and of the extent and completeness of the rights to be conveyed therewith. Not only is the water company in position to convey the fee of the whole of Mountain Lake and its immediate watershed, and also of the lands continuously on either side of the brook from the lake to the reservation, but it has acquired by riparian purchase and contract the absolute right to use or divert the entire flow of the stream. This right, as has been noted, includes the right to the entire water of the tributary cascade brook above mentioned, the water of which is at present being diverted by the Government without ownership or contract of any sort. The sale of the Buttermilk Falls Brook, now proposed, would carry with it, of course, the entire control and use of Cascade Brook. Moreover, the water company, in parting with the principal source of its present supply for the town of Highland Falls, must necessarily provide an alternative supply for the town. This, as already indicated, will involve the construction of one or more storage reservoirs and the bringing in of additional supplies from the near vicinity, all of which will be a matter of no small expense, which must of course be covered by the proceeds of the proposed sale.

It seems proper in this connection to add one or two observations

regarding Long Pond, which has been mentioned above as another possible source of supply. This pond is at once much lower than either Mountain Lake or Round Pond, and is more remote from West Point. It has a limited watershed, and is filled by no constant stream, and has itself no overflow in dry seasons. There is no likelihood that its supply would be nearly sufficient for the rapidly increasing needs of West Point. The drainage of the pond is toward the south and into Popolopen Creek. A ridge of some 100 feet in height separates it from the West Point watershed, and to utilize its water a pumping station would have to be established and maintained at no small cost. The pond could not be flushed and cleaned without pumping it out, and there would be no certainty in such case that it would refill during the same season. In many respects Long Pond is similar to Round Pond, the supply of which has greatly fallen off both in quantity and quality.

There is also grave doubt whether it would be possible for the Government to acquire a satisfactory title to Long Pond. The deed from the original colonial grantee, upon which the present title depends, conveys only down to the high-water level of the pond, leaving the ownership of the bed of the pond in serious doubt. Moreover, the overflow from the pond can not be used save by the consent of all of the riparian owners below; and such consent, it is understood, has not been obtained.

I shall be greatly obliged if you will transmit this communication to the Secretary of War, accompanying it with such observations thereon as you may deem proper. I shall, of course, take pleasure in furnishing to the Government upon request any further details which may be desired.

Respectfully,

CALEB HUSE.

Col. ALBERT L. MILLS, U. S. A.,  
*Superintendent, West Point, N. Y.*

[First indorsement.]

HEADQUARTERS UNITED STATES MILITARY ACADEMY,  
*West Point, N. Y., November 12, 1901.*

Respectfully forwarded, in accordance with the within request, to the honorable Secretary of War, through the Adjutant-General of the Army.

In connection with this matter, attention is invited to the inclosures Nos. 1 and 2.

It is imperative that immediate steps be taken to increase West Point's water supply, and with this purpose in view an item, amounting to \$88,442, was included in the current Military Academy estimates for the purchase of Long Pond, with its watershed, and the establishment of an engine at the pond to pump water, when needed, into the existing pipe line leading from Round Pond to the post.

In view of the within proposition it is recommended that the War Department submit the whole matter to Congress for consideration with the coming Military Academy bill, approving an appropriation of \$100,000, or so much thereof as may be necessary, to secure the needed additional water supply, the title to the land to be obtained by condemnation proceedings. This accomplished, a board of officers could then examine thoroughly into the merits of both the Long and Log Meadow Pond projects, and recommend the adoption of the one



found to be most advantageous. Condemnation proceedings, I believe, will materially reduce the price at present asked for the land, and as both projects will give ample water and are of about equal value, the Government will have the advantage of the situation—a matter of congratulation.

Maj. James L. Lusk, on duty in the office of the Chief of Engineers, has thorough knowledge of the whole subject.

A. L. MILLS,  
*Colonel, U. S. A., Superintendent.*

[Second indorsement.]

ADJUTANT-GENERAL'S OFFICE,  
*Washington, November 18, 1901.*

Respectfully submitted to the Secretary of War.

THOMAS WARD,  
*Acting Adjutant-General.*

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*Report of the Superintendent of the Military Academy concerning the proposed sale to the Government of Bog Meadow Pond, Buttermilk Falls Brook, and Cascade Brook by the Citizens' Water Company of Highland Falls, N. Y.*

A map showing all the sources of water supply for the post of West Point and the watersheds of Bog Meadow and Long ponds is herewith forwarded for a more complete understanding of the matter.

In an exhaustive and convincing report dated November 17, 1893, Maj. James L. Lusk, Corps of Engineers, after thoroughly considering all feasible methods, nine in number, of increasing the then existing water supply of West Point, stated that but four were worthy of consideration, viz:

1. Long Pond.
2. Fort Putnam Swamp (now Lusk Reservoir).
3. Cascade Ledges.
4. Bog Meadow Pond.

Major Lusk favored the Long Pond project above all others, but apparently for the reasons that legal difficulties were apprehended and that an appropriation was already available for commencing the Fort Putnam Swamp project. The latter was undertaken and was carried to completion during the current year.

At the time of Major Lusk's report the daily consumption was estimated at one-third of a million gallons. Measurements made in 1901 show that the consumption has risen to two-thirds of a million gallons daily. There is no hope that the consumption of water will ever be reduced and, keeping in view the probable extension of the Military Academy plant, it is prudent to provide for a daily consumption of at least 1,000,000 gallons in the not distant future. The experience of the year 1900 has shown that the existing requirements have already reached the capacity of the present water supply, notwithstanding the increase afforded by the completion of Lusk Reservoir, and a still further and much larger increase is imperatively needed.

The character of all available supplies is such that water must be stored for from two to six months' supply each year. Keeping in mind the probable future requirements of 1,000,000 gallons daily and a six

months' storage capacity, it will readily be understood that no small project can be entertained, and the Cascade ledges project *must* accordingly be dismissed. This leaves but two projects for an adequate future water supply open for consideration, Long Pond and Bog Meadow Pond.

As regards the quality and quantity of water afforded by the two ponds, there appears to be little material difference. The watersheds directly tributary to each is of about the same extent, namely, 700 acres, capable of yielding about 350,000,000 gallons annually, or much more than required to fill either pond. The storage capacity of Long Pond in its natural state is about 200,000,000 gallons. That of Bog Meadow Pond is not given, but if 60 acres in extent, as represented, each foot in depth is equivalent to nearly 20,000,000 gallons. Available maps show Bog Meadow Pond somewhat smaller than Long Pond, but the area of the former may have been increased by the dam at its outlet. The storage capacity of both ponds may be increased considerably by the construction of proper dams.

The quality and quantity of water being practically the same in both cases, and abundant for present and future requirements, it becomes a question which will be more economical and advantageous from other considerations. With respect to Long Pond, it is assumed that the watershed and riparian rights can be secured for \$70,000, and the necessary steps have been taken to obtain an appropriation from Congress for this purpose. The proposition of the Citizens' Water Company calls for an immediate outlay of \$100,000 for land and water rights. In passing, it may be noted that in 1891 the company offered what appears to be the same proposition, excepting 215 acres of land on the Cascade watershed, for \$50,000, which offer was reduced in 1893 to \$37,500.

In examining the proposition of the Citizens' Water Company several things are to be noted, as follows:

1. They offer only a comparatively small portion of the watershed directly tributary to Bog Meadow Pond. The land below the Pond on either side of Buttermilk Falls Brook is valuable only as a right of way for a pipe line and as a site for future reservoir construction. While the statement of the company as to the character of the watershed and the improbability of contamination is true, still it is a decided advantage to control absolutely the entire shed.

2. The offer of 215 acres on the Cascade watershed is of *little value* to the Government for the following reasons:

- (a) The water from the Cascade watershed can be utilized only through the agency of reservoirs artificially constructed. The only sites for such reservoirs are at the Eagle Valley crossroads or on Buttermilk Falls Brook below the junction of the two streams. Such reservoirs would be very expensive and not required for many years, if ever, provided either Long or Bog Meadow ponds are added to the water supply.

- (b) The Cascades *do not* constitute the principal source of supply of the present post system, as alleged by the water company. While it is true that a 6-inch pipe line carries water from the Cascades to Lusk reservoir, the quantity so conveyed is *insignificant and unimportant* in comparison to the supply contributed to Lusk reservoir from its own watershed and by the 8-inch pipe line from Cro' Nest, which are more than ample to fill the reservoir by themselves.

- (c) The right to the use of a part of the Cascades must certainly

belong to the Government as a riparian owner, and the amount drawn off is probably no more than this right conveys.

3. Bog Meadow Pond is a natural pond, whose capacity has been largely increased by a dam at the south end. This dam is of indifferent and even dangerous construction, and its maintenance by the Government could not be entertained for a moment. A new dam would have to be built without delay, at a cost of about \$50,000.

It will now be practicable to compare the advantages and disadvantages of the two projects, as follows:

The Long Pond project contemplates the absolute control of the entire watershed tributary to the same, affords a natural storage basin the conditions of which are fixed and which will need no cleaning. The one important disadvantage is that the water must be pumped. This disadvantage is minimized in a measure by the fact that a portion of the water falling on the shed can be diverted by gravity into Round Pond and delivered to the post without pumping.

The Bog Meadow project as submitted by the Citizens' Water Company possesses the advantage that all water can be conveyed to the post by gravity, and that the land is conveyed, which can be utilized in the future for further increasing the storage capacity. It has the disadvantages that the entire watershed is not conveyed and that a safe dam must be constructed at once.

As to cost, the Bog Meadow project as presented will involve an outlay of \$150,000 for land, water rights, and dam, whereas the Long Pond project should require not more than \$85,000, allowing \$15,000 as the cost of an adequate pumping plant. The cost of laying pipe to connect with the existing pipe to Round Pond will not be materially different in the two projects. In any event it will be necessary at some future time to lay a larger pipe all the way to the post in order to utilize the full capacity of either project.

As to the cost of pumping 1,000,000 gallons daily, if needed, during six months in the year, which may be regarded as a maximum for many years to come, \$1,500 should be sufficient. Allowing 7 per cent depreciation annually on the cost of the pumping plant brings the annual cost of maintenance and operation of the Long Pond project to \$2,500, which capitalized at 4 per cent represents \$62,500, or about the same as the difference in first cost of the two projects.

In conclusion, so far as regards economy, quality, and quantity there is really little choice between the two projects. The absolute control of the watershed and the existence of a wholly natural pond are factors which weigh strongly in favor of the Long Pond project and indicate this to be the more favorable.

Whichever project is adopted, if title to the land concerned is secured by regular judicial condemnation proceedings, the cost will certainly be materially reduced.

In the foregoing memorandum it has been assumed that the Citizens' Water Company is in a position to transfer all the rights it enumerates in its proposition, and that the Government will be able to overcome all legal obstacles in the way of securing undivided control of the Long Pond watershed.

A. L. MILLS,  
*Colonel, U. S. A., Superintendent.*

HEADQUARTERS UNITED STATES MILITARY ACADEMY,  
*November 12, 1901.*

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